Actinomycotic osteomyelitis of the skull and epidural space

Case report

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Actinomycosis, a chronic granulomatous disease secondary to a microorganism (Actinomyces israeli) with properties intermediate between those of bacteria and molds, may on occasion involve the central nervous system. The following case represents an unusual neurological manifestation of the disease, with lesions evident in both the cranial epidural space and calvarium.

Case Report

The patient, a 40-year-old Spanish-American farmhand, was admitted to the Colorado General Hospital in July, 1967, because of recurrent generalized seizures of 6 years' duration, usually occurring a day or two after weekend drinking "sprees." On the day prior to admission, he had experienced a typical seizure which progressed to status epilepticus.

The past medical history was significant. In 1945, at age 18, he had been hospitalized because of purulent drainage from the socket of a recently extracted left mandibular molar, and treated with intramuscular injections of penicillin, 20,000 units every 3 hours for 8 days. He was rehospitalized 1 year later because of purulent drainage from a cutaneous sinus over the vertical ramus of the left mandible and radiological evidence of osteomyelitis in this area (by report). Cultures of pus from the cutaneous sinus grew staphylococcus aureus, coagulase positive. A bony sequestrum was resected from the left mandibular ramus, but no description of this specimen is available. He was again treated with 20,000 units of penicillin given intramuscularly every 3 hours for 15 days; the mandibular wounds subsequently healed, with no further evidence of purulent drainage from any part of his head.

Examination. On admission in July, 1967, the patient was in an afebrile postictal state, lethargic but easily roused, with a mild left hemiparesis. Neurological deficits cleared rapidly after admission. Examination of the cranial nerves, including funduscopic examination, was within normal limits. His neck was supple. There was a well-healed scar over the left mandibular area and a slight deformity of the mandibular ramus. The skull was slightly asymmetrical, the left parieto-temporal area being more prominent than the right, but there was no local scalp tenderness or fluctuance.

Routine laboratory work including a white cell count, hemoglobin, and urinalysis was normal. Skull films demonstrated gross and relatively uniform thickening of the left lateral vault (parietal, adjacent frontal, occipital) to 30–35 mm, with obliteration of the diploic space and inner table irregularity but no focal osteolysis (Fig. 1). The lesion
crossed the midline to the midright parietal vault, and tomography demonstrated extension into the base to include the entire floor of the left middle fossa to the body of the sphenoid bone, posterior and lateral wall of the left orbit, and the left temporal bone lateral to the otic capsule and base of left pterygoid process (Fig. 2). The sinuses were normal. Minimal lateral cortical thickening of the vertical ramus of the left mandible was present. Films of the pelvis and thorax were normal. Repeat physical examination of the skull and scalp after review of the skull x-rays revealed no bruits to auscultation, but did show a slight increase in scalp temperature over the left parietal area (99.6°F) as compared to the right (98.6°F) as measured by a thermistor. An electroencephalogram was reported as abnormal because of excessive fast activity without focal abnormalities.

The absence of an osteolytic component to the widened vault and the eccentric location of the lesion, in addition to a normal central skeleton, were considered atypical for Paget's disease. Fibrous dysplasia, however, was considered as an acceptable radiographic diagnosis. A left common carotid angiogram with multilfilm subtraction demonstrated 1 cm inferior and 1.4 cm medial displacement of the left cerebrum (as a transfalx herniation from left to right) due to invagination of the vault. No focal left cerebral hypervolumia was present (Fig. 3). Marked enlargement of the left middle meningeal, ophthalmic, and anterior meningeal arteries (and grooves) was noted. The intracranial internal carotid artery and branches were slightly attenuated but uniform in caliber. The cerebral venous drainage was not recognizably deformed or altered, and the circulation time was normal.

Operation. The initial perforator opening of a left parietal craniectomy was placed just posterior to the coronal suture, approxi-